

ABSTRACT

The invention provides a vacuum safety valve for a vacuum system that can be used for debris collection, and which is especially useful in trench rescue. Under predetermined vacuum level conditions (e.g., when the airflow path of a vacuum system is blocked by an obstruction), the safety valve is designed to automatically open radial ports around the circumference of the safety valve. When the radial ports are opened, the vacuum level in the vacuum system between the obstruction and the safety valve is at least significantly reduced thereby preventing full vacuum from acting on the obstruction. In a preferred aspect, the safety valve further comprises a manual vacuum release such that an operator can trip the release and reduce the vacuum level in a vacuum system comprising the safety valve. The invention also provides a related vacuum system and/or vacuum rescue system including additional elements and methods of debris removal using the inventive systems and nozzles.